

## ABSTRACT OF THE DISCLOSURE

Biomaterial, for example bioactive silicon, may be fabricated by anodizing a silicon wafer to produce a wafer having a porous silicon region. *In vitro* experiments have shown that certain types of porous silicon cause the deposition of apatite deposits both on the porous silicon and neighboring areas of bulk silicon when immersed in a simulated body fluid solution. This deposition of apatite provides an indication that porous silicon of appropriate form is bioactive, and therefore also biocompatible. A form of porous silicon is dissolved in the simulated body fluid solution and this is an indication of a resorbable biomaterial characteristic. In addition to porous silicon, certain types of polycrystalline silicon exhibit bioactive characteristics. Bioactive silicon may be used in the fabrication of biosensors for *in vitro* or *in vivo* applications. The bioactivity of the bioactive silicon may be controlled by the application of an electrical potential thereto.